

Multiview Drawing Orthographic Projection

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- Theory of Projection
- Concept of views
- Projection lines

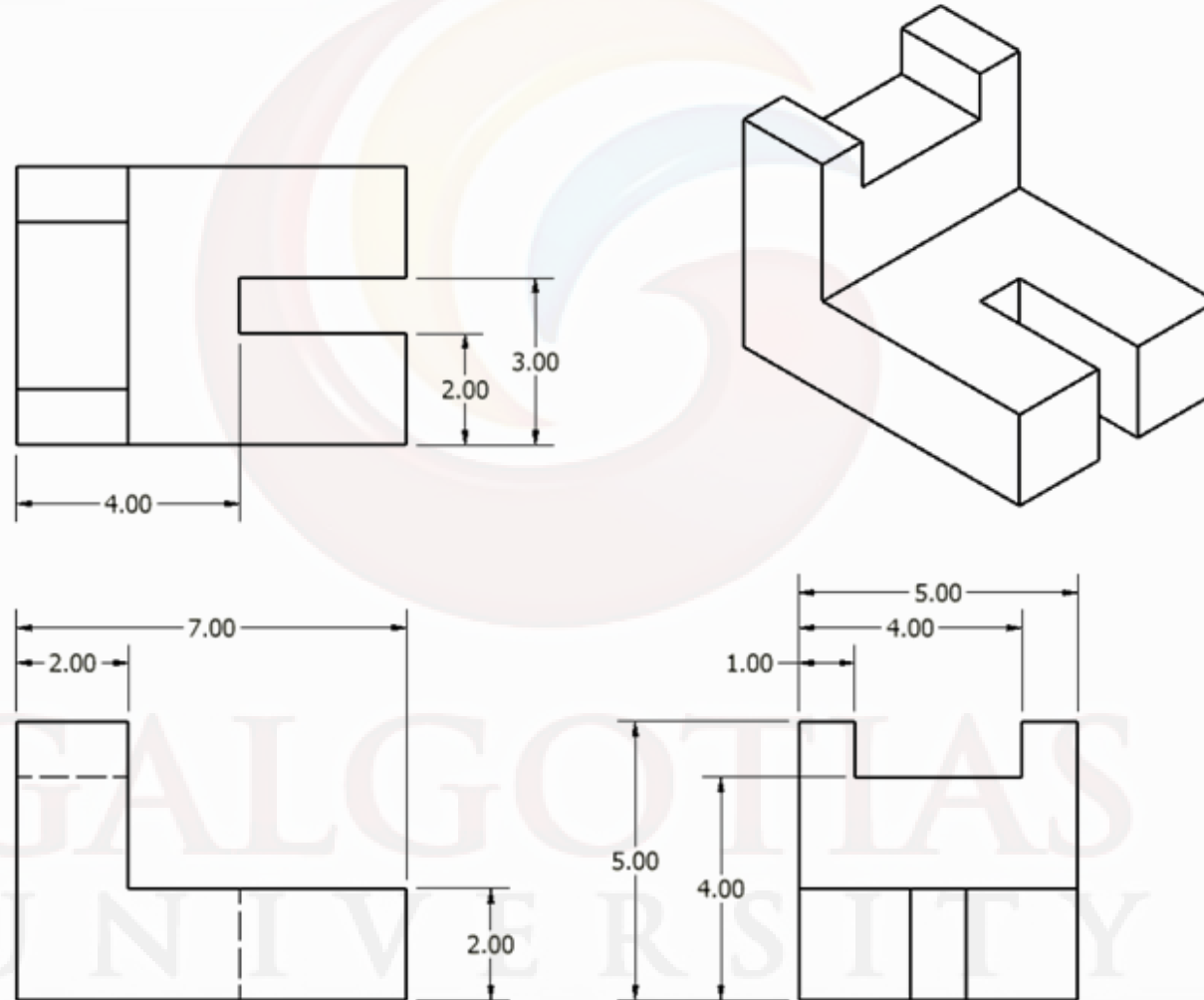
Objectives

- ❖ To understand the meaning of multiview drawing
- ❖ To understand the concept of orthographic projection
- ❖ To understand how to draw different views of a given object

A ***multiview drawing*** is one that shows two or more two-dimensional views of a three-dimensional object.

Multiview drawings provide the shape description of an object. When combined with dimensions, multiview drawings serve as the main form of communication between designers and manufacturers.

Introduction

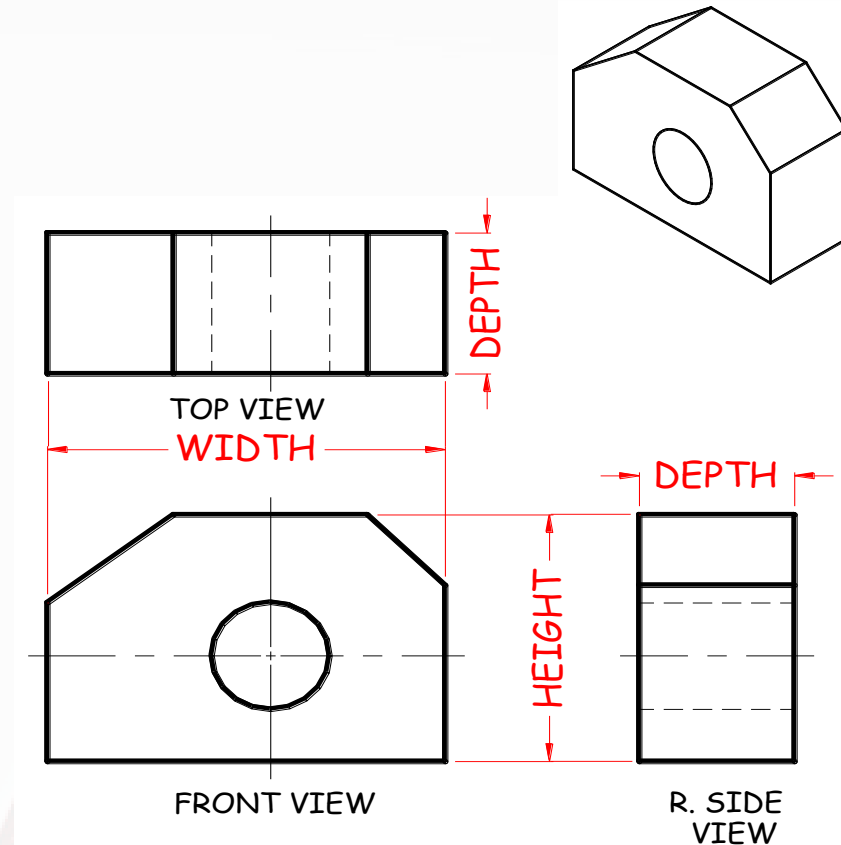


All three-dimensional objects have **width**, **height**, and **depth**.

Width is associated with an object's **side-to-side** dimension.

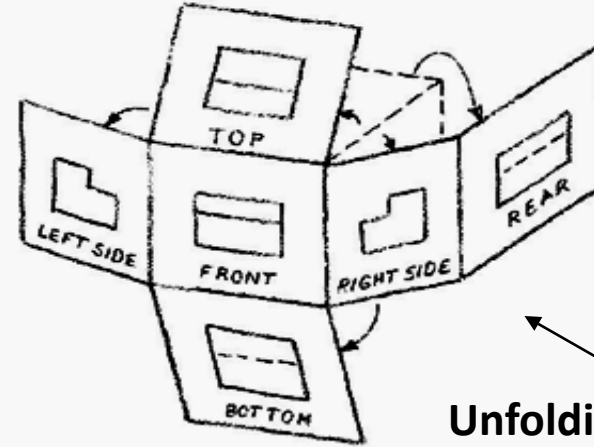
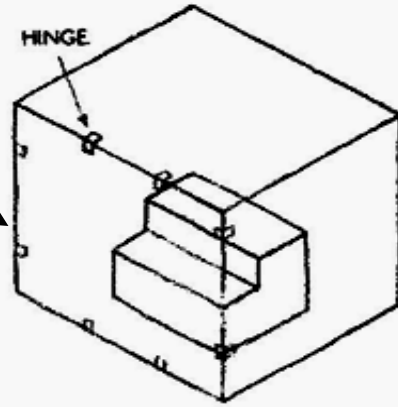
Height is the measure of an object from **top-to-bottom**.

Depth is associated with **front-to-back** distance.



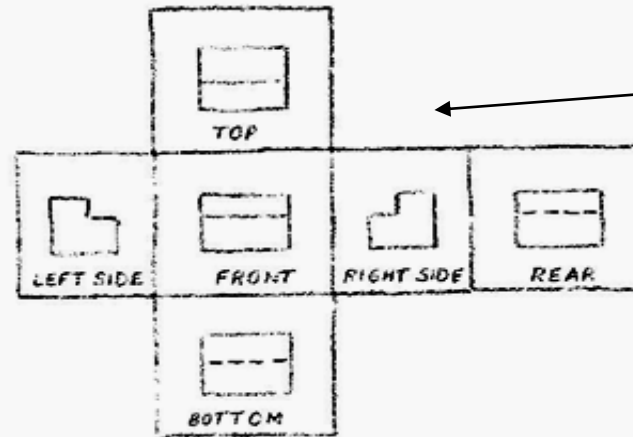
Glass Box – 6 views of an object

Glass Box



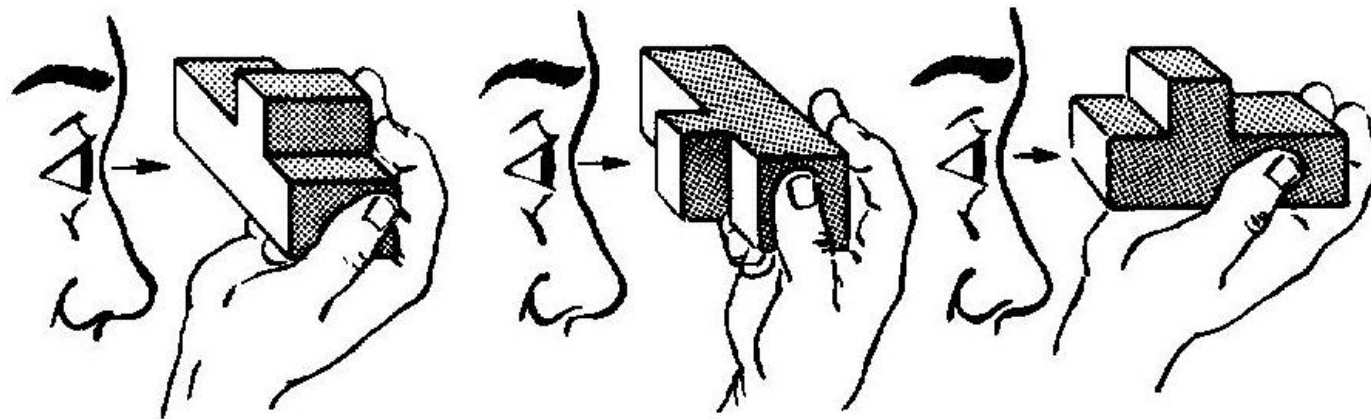
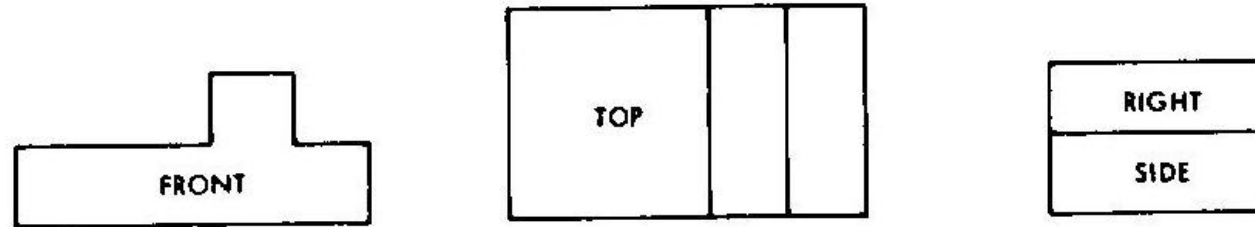
Unfolding the
Glass Box

**All the views
unfold as shown
around the
stationary front
view.**



6 views of an
object – 2 D

Viewing the object-Visualizing views



Notice how each view appears when looking directly at that view of the object.

3 View Drawing

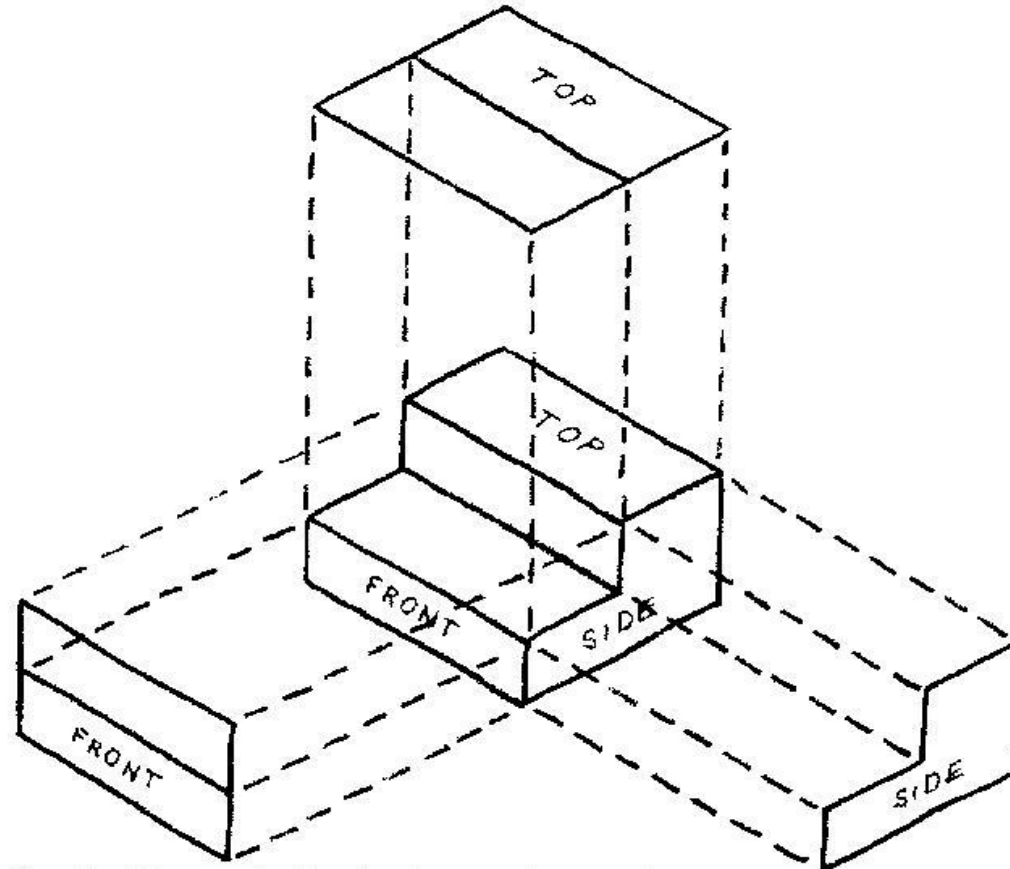
Most Commonly Used Views

Front View

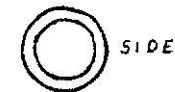
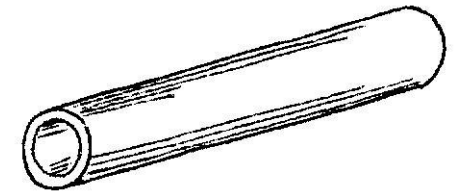
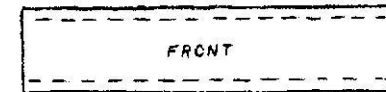
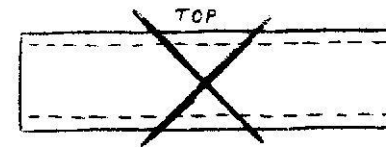
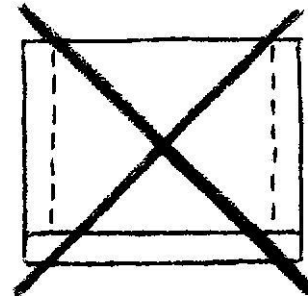
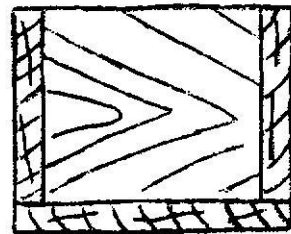
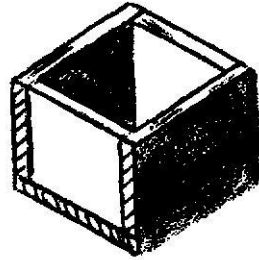
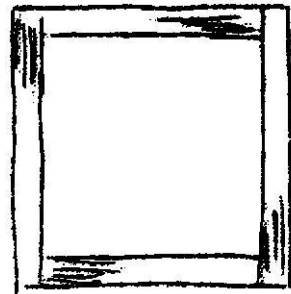
Top View

Side View

*Color code can
help to
visualize*



Duplicate Views are Unnecessary



Only 2 views are needed for these examples

Sketching Activity

Lego Part – Multiview Drawing

<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; width: 150px; height: 150px; margin: 10px;"></div> <div style="text-align: center;">Top</div> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; width: 150px; height: 150px; margin: 10px;"></div> <div style="border: 1px solid black; width: 150px; height: 150px; margin: 10px;"></div> <div style="border: 1px solid black; width: 150px; height: 150px; margin: 10px;"></div> <div style="border: 1px solid black; width: 150px; height: 150px; margin: 10px;"></div> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; width: 150px; height: 150px; margin: 10px;"></div> <div style="text-align: center;">Front</div> <div style="border: 1px solid black; width: 150px; height: 150px; margin: 10px;"></div> <div style="border: 1px solid black; width: 150px; height: 150px; margin: 10px;"></div> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; width: 150px; height: 150px; margin: 10px;"></div> <div style="text-align: center;">Bottom</div> </div>		<p><u>Sketching Activity—</u> <i>Draw the 6 views of a Lego building piece.</i></p> <ul style="list-style-type: none"> • <i>Use Pencil</i> • <i>Draw Freehand</i> • <i>Light construction lines</i> • <i>Darken object lines</i> 	
		<div style="display: flex; justify-content: space-between;"> <div style="width: 25%;">Left Side</div> <div style="width: 25%;"></div> <div style="width: 25%;">Right Side</div> <div style="width: 25%;">Rear</div> </div>	
Name	Multiview Drawing-Orthographic Projection	Date	Section

A pictorial drawing

- ❖ Shows the object as it appears, not as it really is.
- ❖ Holes in the base appear as ellipses, not as true circles.
- ❖ Is a drawing.
- ❖ Shows an object as it would appear in a photograph.
- ❖ Shows the way an object looks, in general.
- ❖ It does not show, the exact forms and relationships of

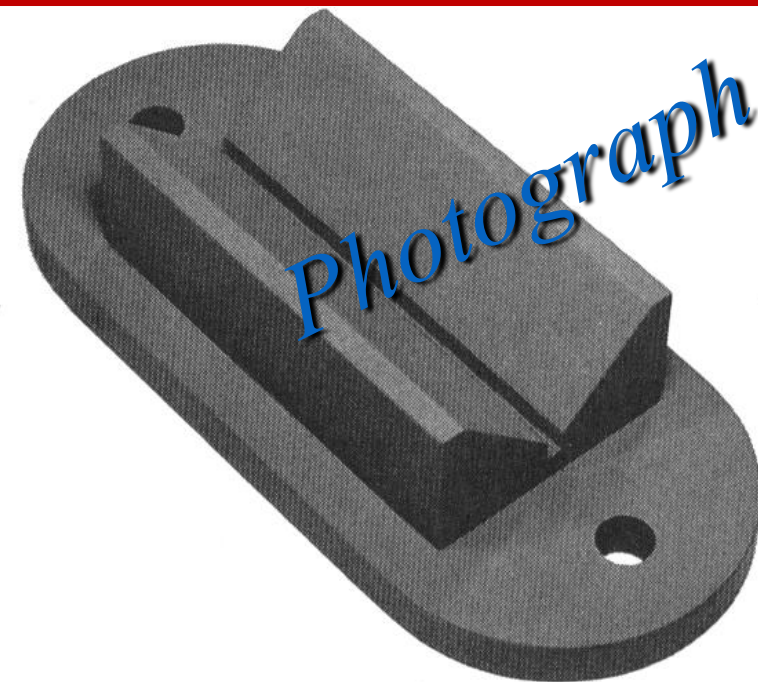
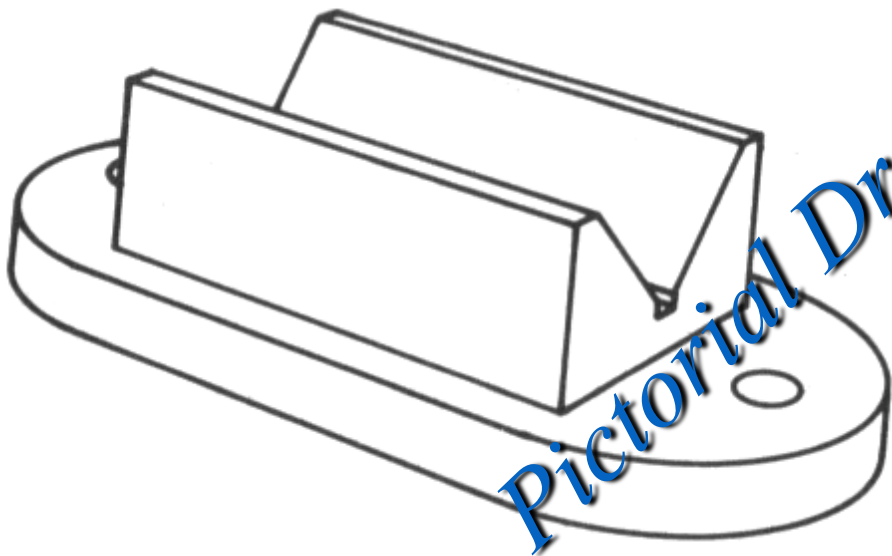


Fig. 5-2 *Photograph of a V-block.*

Multiview Drawing–3 view and Pictorial

Sketching Activity—

Draw a Pictorial and 3 views of a Lego building piece.

- Use Pencil
- Properly align the views
- Draw Freehand
- Light construction lines _____
- Darken object lines _____
- Show hidden lines - - - - -



Top



Front

Side

Pictorial View - 3D Drawing



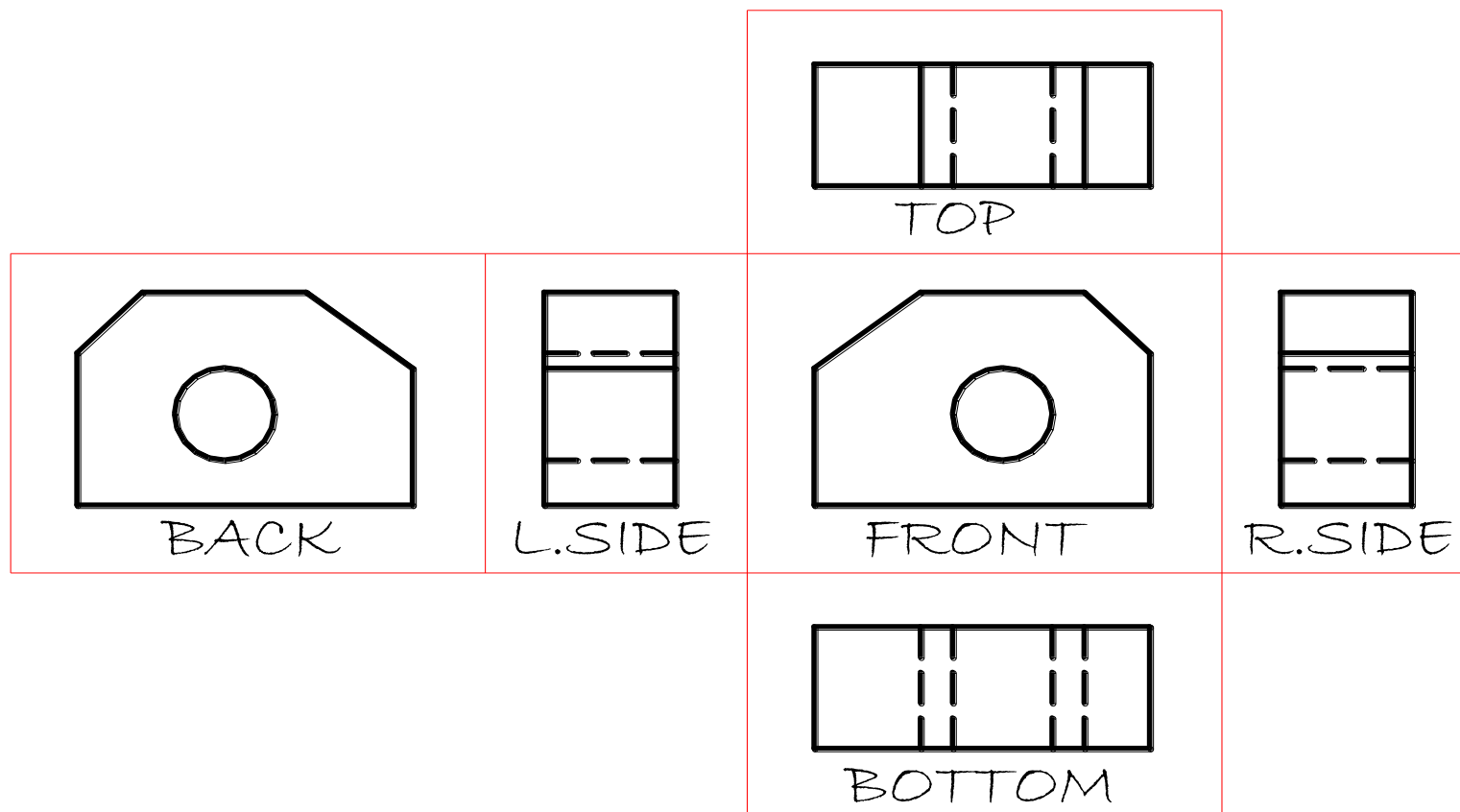
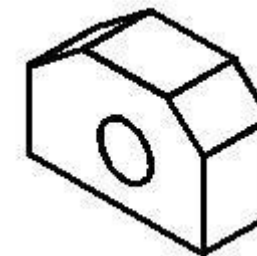
Name _____

Multiview Drawing-3 view and Pictorial

Date _____

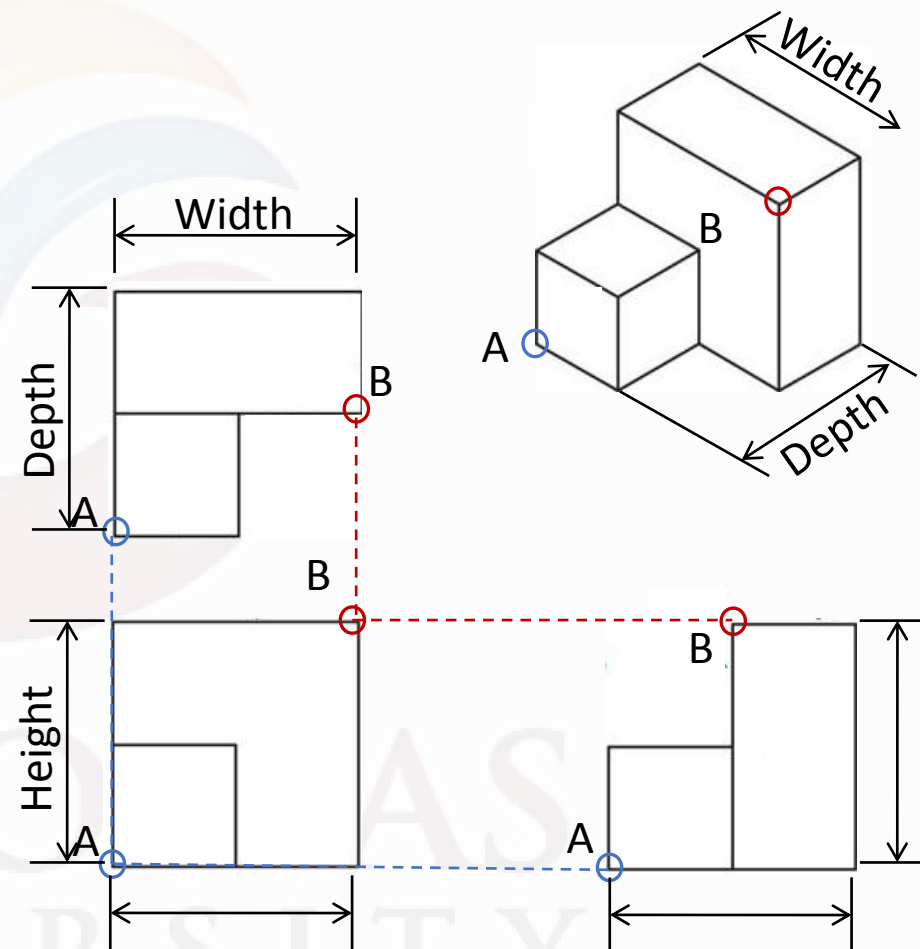
Section _____

- Unfolding the box produces an arrangement of the six views



View Alignments

- In orthographic projections, the views are aligned such that each point on the object is lined up with itself all three views.
- Each view shows two dimensions
 - Top: width and depth
 - Front: height and width
 - Right side: height and depth



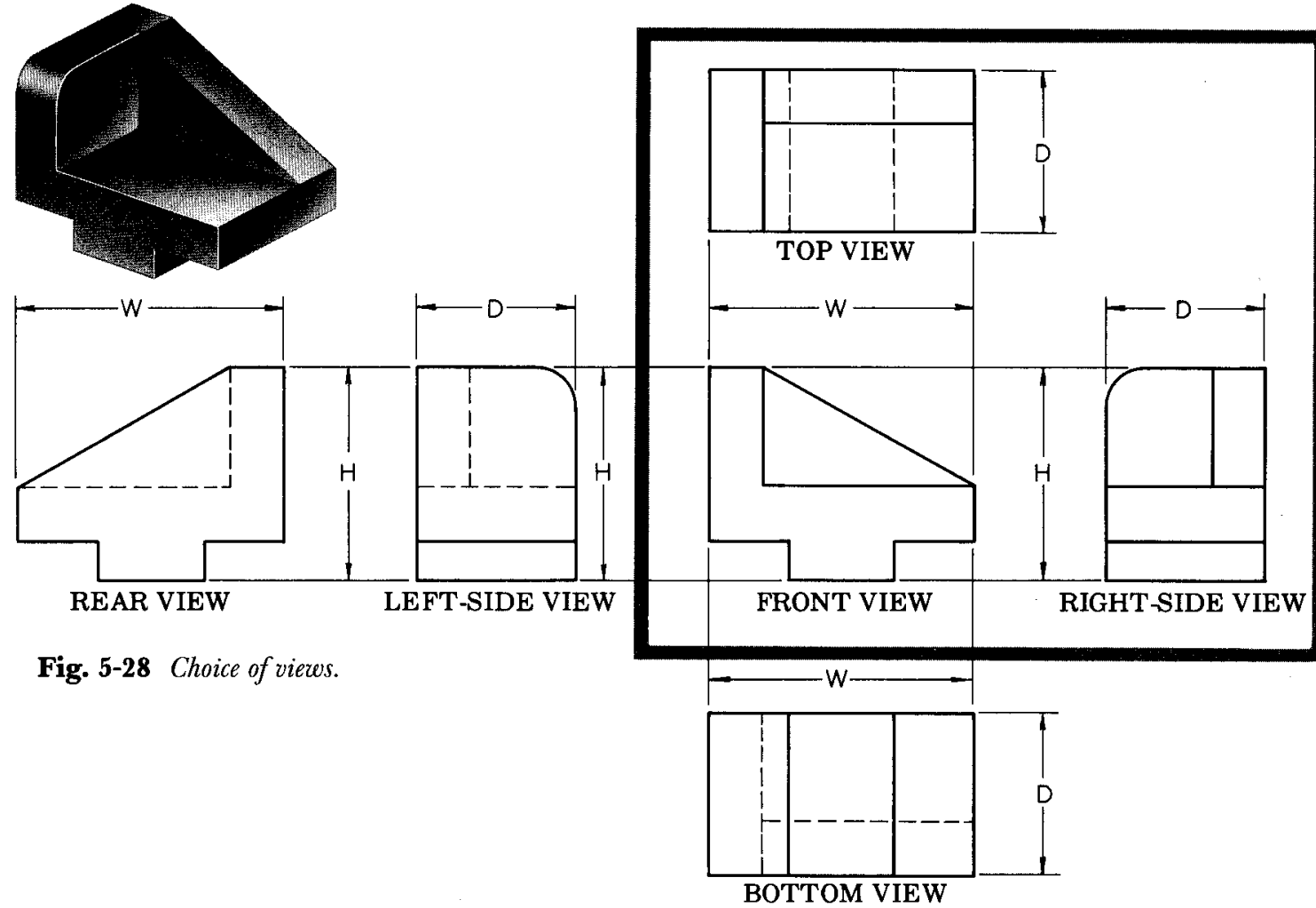
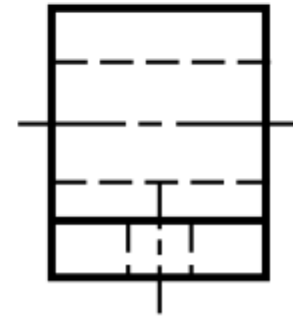
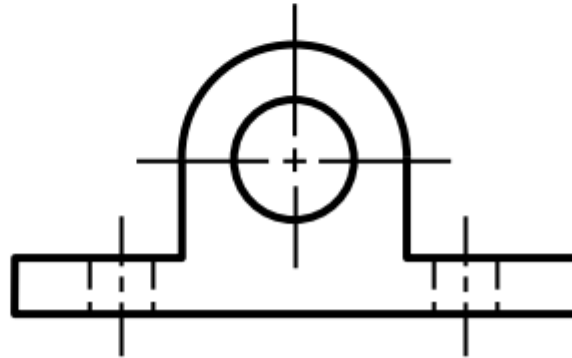
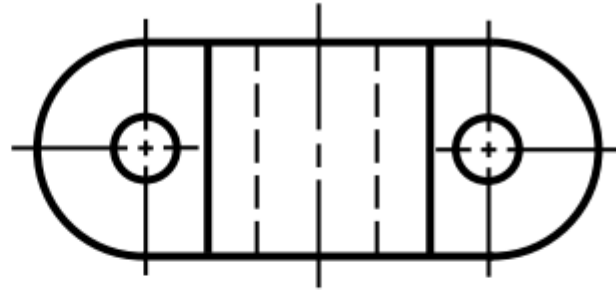
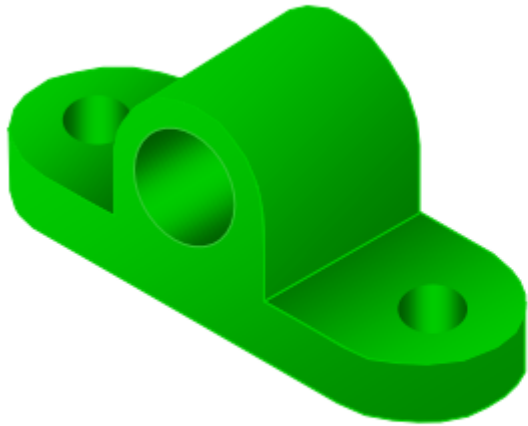
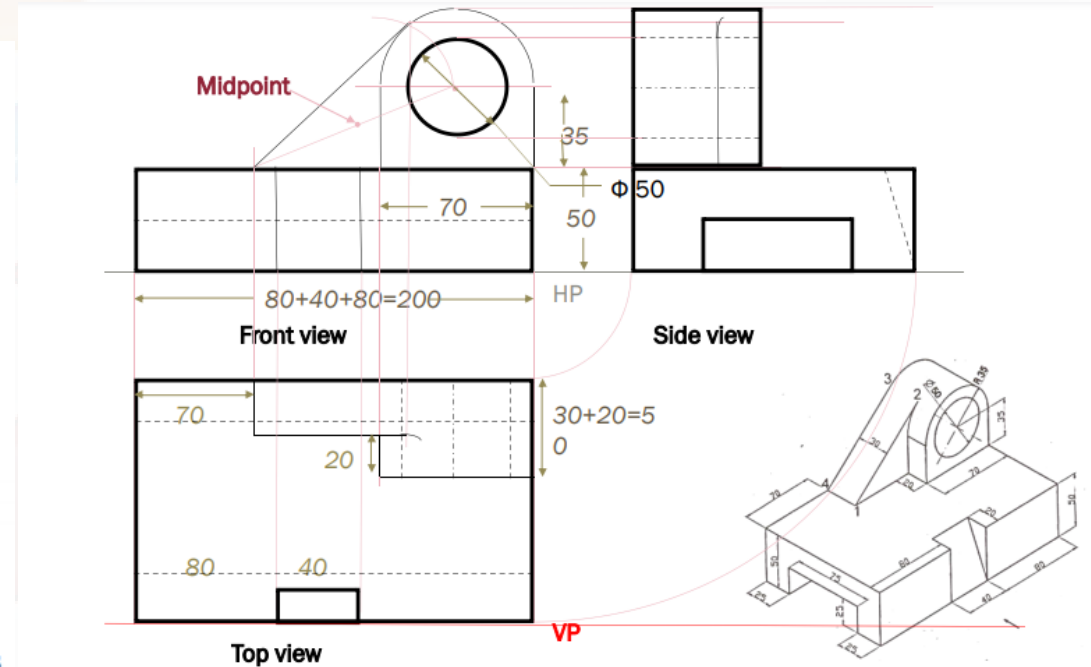
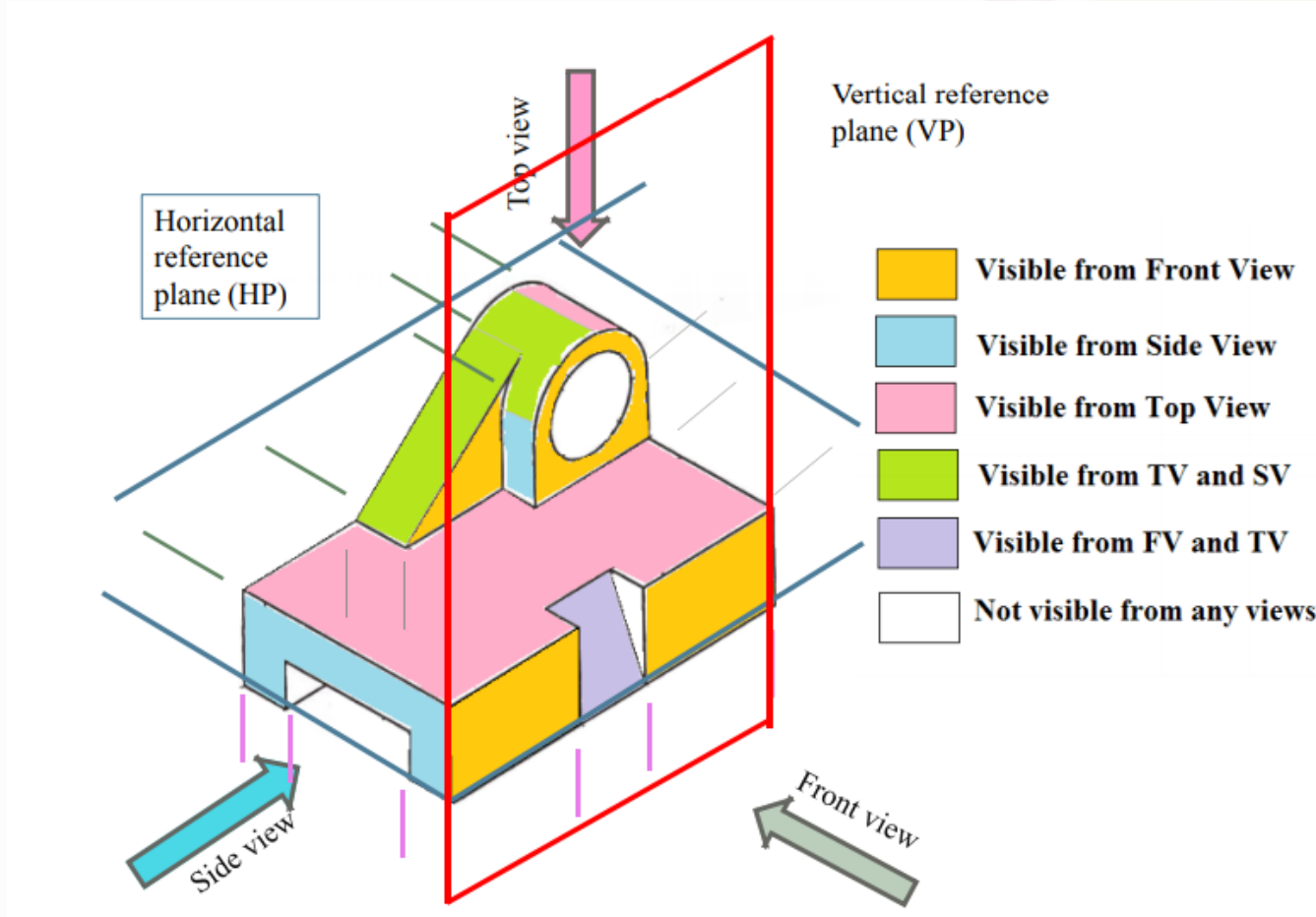


Fig. 5-28 *Choice of views.*



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Summary



[http://www.iitg.ac.in/kpmech/ME111-2016/ORTHOGRAPHIC%20PROJECTIONS-1%20\(2016\).pdf](http://www.iitg.ac.in/kpmech/ME111-2016/ORTHOGRAPHIC%20PROJECTIONS-1%20(2016).pdf)

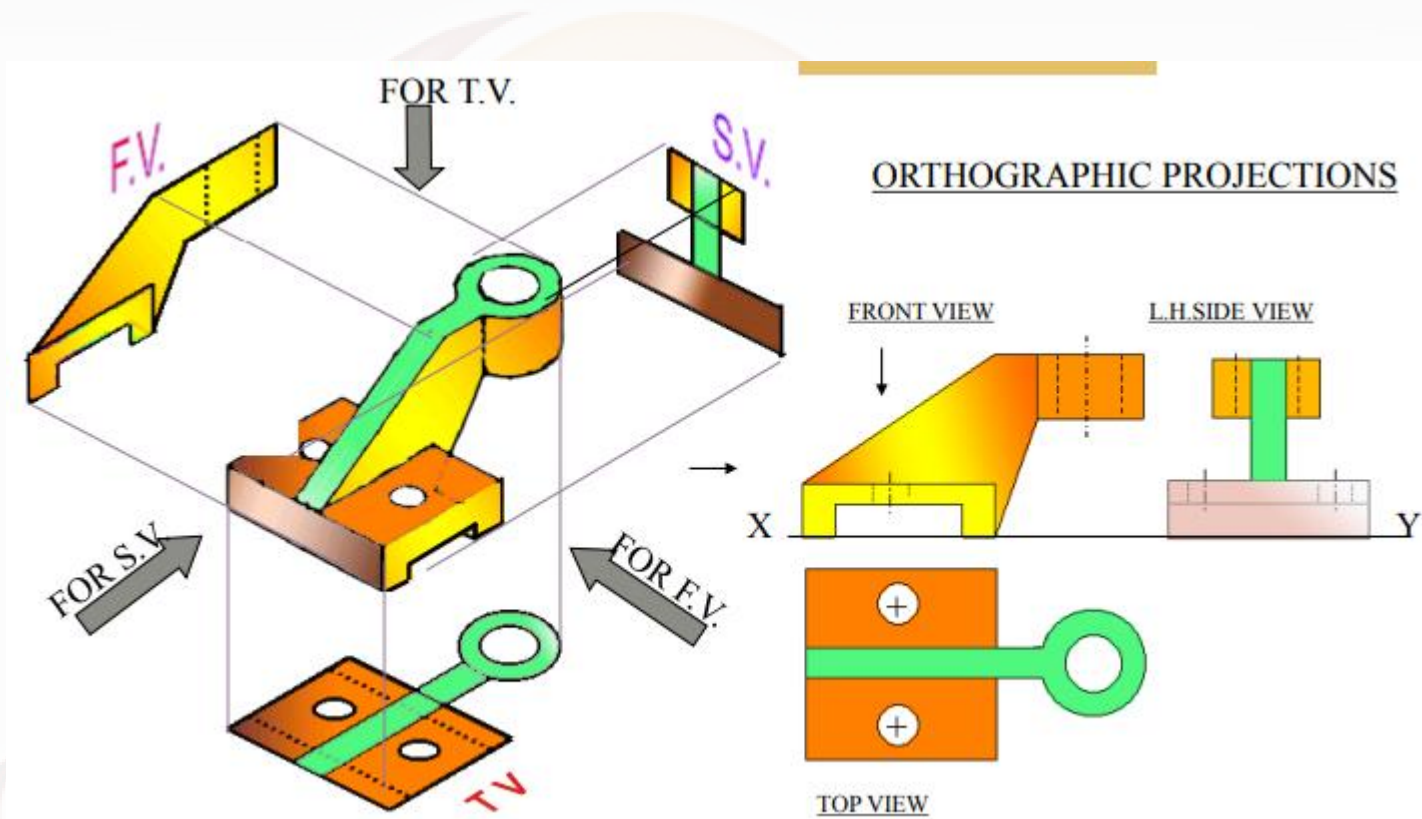
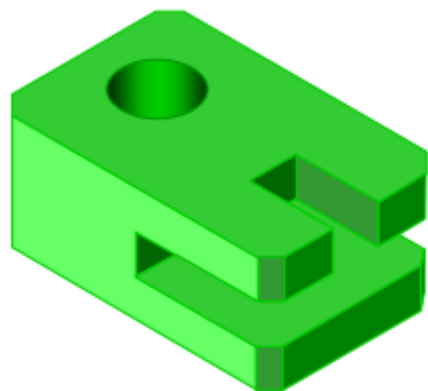
https://www.fd.cvut.cz/departament/k611/PEDAGOG/K611GM_A_soubory/4_Multiview_Drawing.pdf

https://en.wikipedia.org/wiki/Multiview_projection

ND Bhatt Book

NPTEL

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Thank You